ABSTRACT

The present invention concerns a method of tuning a plurality of electrostatic quadrupoles used for focusing an ion beam in an ion beam implanter. The steps of the method include: classifying the plurality of electrostatic quadrupoles into one of a predetermined number of groups, and for each of the predetermined number of groups, tuning the quadrupoles in the group by iteratively substituting values for a voltage to be applied to each of the quadrupoles in the group using a multi-variable heuristic algorithm and concurrently measuring final beam current measured downstream of the ion accelerator to determine a set of applied voltage values that maximize the final beam current among those applied voltage values tested and utilizing the set of applied voltage values to tune the quadrupoles in the group. If the resulting ion beam is suitable, utilizing the determined applied voltages to tune the quadrupoles. If the resulting ion beam is not suitable, changing the predetermined number of groups and repeating the steps of the method.